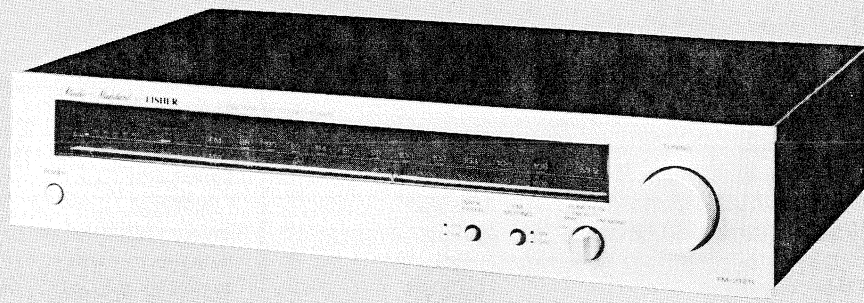
SERVICE MANUAL

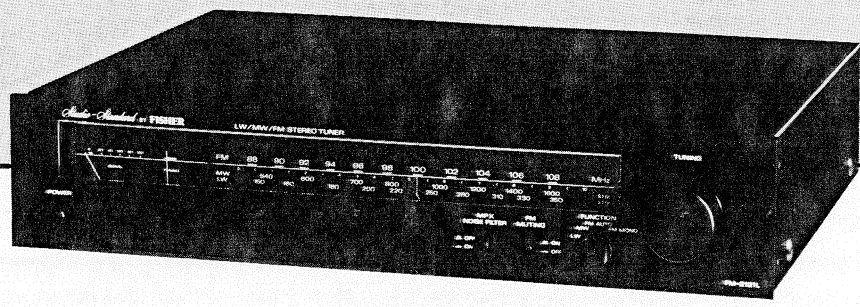
FISHER

FM-2121L

LW/MW/FM Stereo Tuner

(EUROPE)





The first name in high fidelity

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SPECIFICATIONS

FM SECTION	
Tuning Range	87.5 – 108 MHz
DIN Sensitivity (75 ohms)	0.9 μV
IHF Sensitivity (300 ohms)	1.9 μV
Muting Trigger Level (75 ohms)	5 μV
Stereo Sensitivity (46 dB, 75 ohms)	2.5 μV
S/N Ratio (mono)	75 dB
(Stereo)	70 dB
Selectivity (DIN)	70 dB
Capture Ratio	1.0 dB
AM Suppression	60 dB
Spurious Rejection	85 dB
IF Rejection	85 dB
Sub Carrier Suppression (19/38 kHz)	60/75 dB
THD (mono)	0.12 %
(Stereo)	0.2 %
Frequency Response 20 – 15,000 Hz	±1.0 dB
Channel Separation (1000 Hz)	45 dB
Output Voltage (75 kHz Dev.)	1 V

MW SECTION	
Tuning Range	520 – 1610 kHz
Sensitivity	300 μV/m
S/N Ratio	55 dB
Image Rejection	50 dB
Selectivity (10 kHz)	42 dB
THD (30 % Mod.)	0.3 %
Spurious Rejection	55 dB

LW SECTION	
Tuning Range	145 – 355 kHz
Sensitivity	500 μV/m
S/N Ratio	55 dB
Image Rejection	48 dB
Selectivity (10 kHz)	42 dB
THD (30 % Mod.)	0.3 %
Spurious Rejection	55 dB

GENERAL SECTION	
Power Requirements	AC: 110/220 V, 50 Hz
Power Consumption	12 W
Dimensions (W x D x H)	440 x 305 x 89 mm
Weight	4.7 kg

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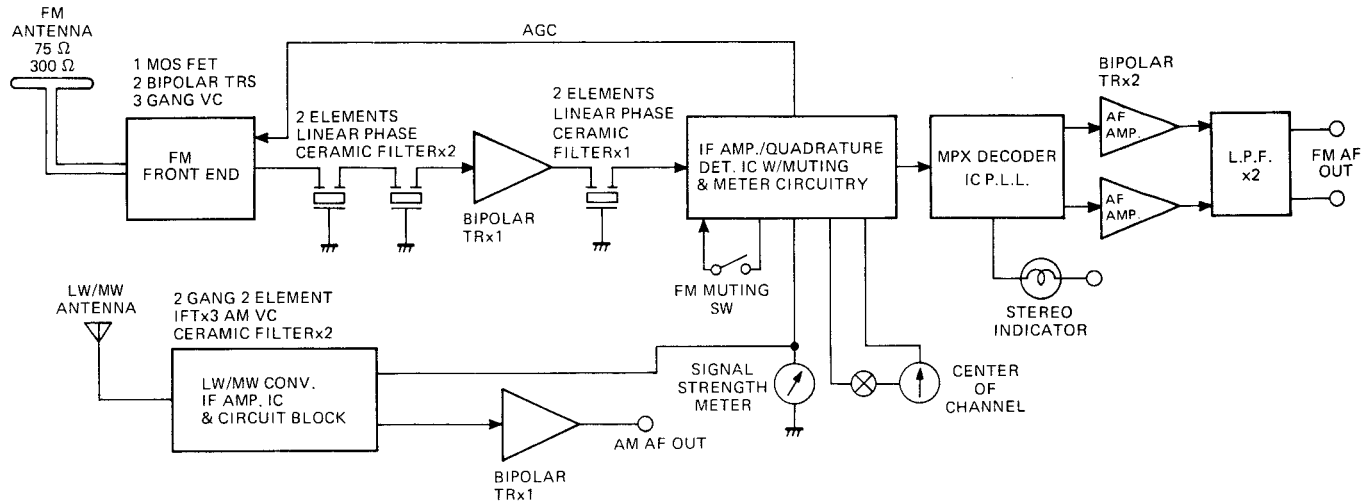
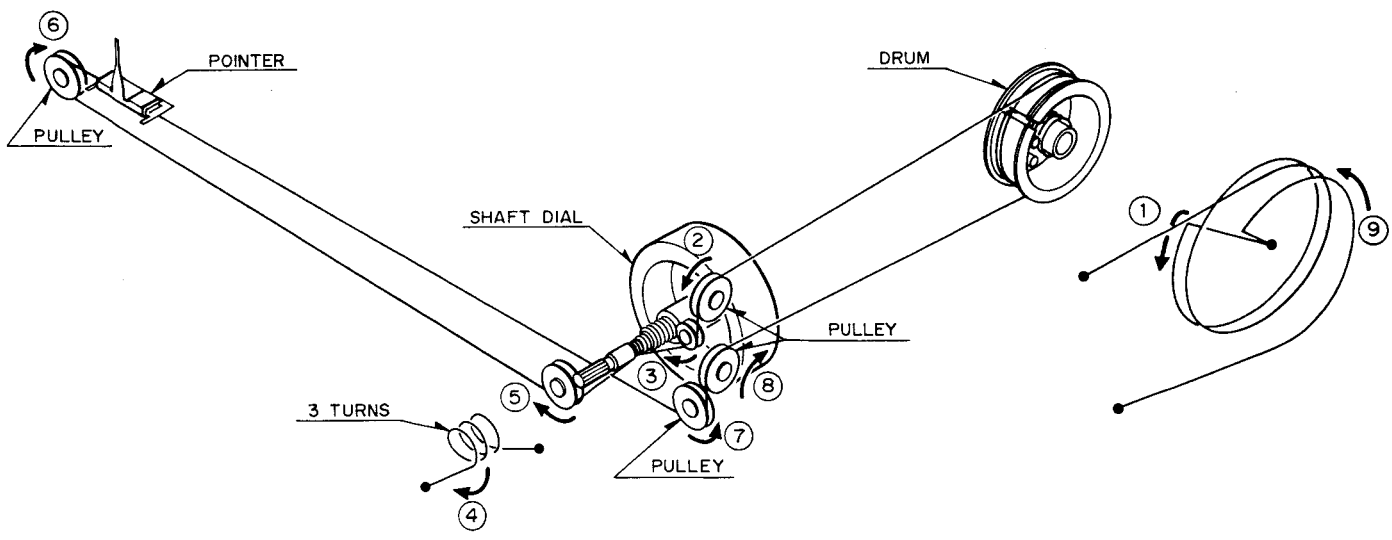
FUNCTIONAL BLOCK DIAGRAM

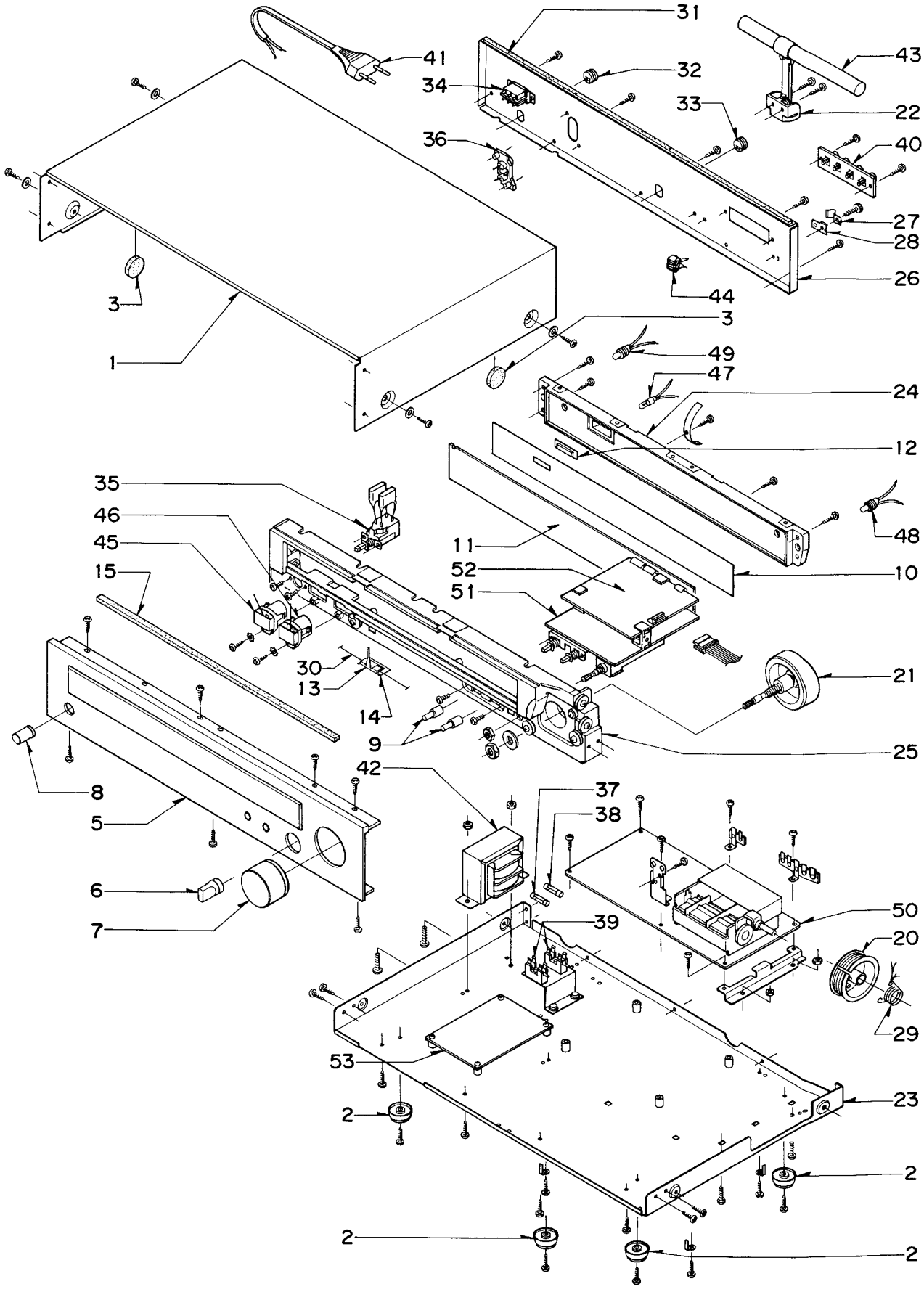


DIAL CORD STRINGING



NOTE: Check to see that the dial cord is correctly strung by turning the dial.

CABINET & CHASSIS EXPLODED VIEW



PARTS LIST

PACKING PARTS LIST

Ref. No.		Parts Number	Description
		131 6 1139 72419	Box Corrugate-EXP
		131 2 7103 33300	Label (Silver)
		131 2 7103 33301	Label (Black)
		131 6 2119 01441	Bag Polyethylene-EXP
		131 6 3009 26910	Pad (Right, Left)

ACCESSORIES PARTS LIST

Ref. No.		Parts Number	Description
		4 2449 20230	Antenna FM
		131 0 4004 11501	Connecting Cord
		131 2 1801 13900	Leg
		131 6 4119 76402	Explanatory Booklet
		131 6 4519 15700	Guarantee Card

CABINET PARTS LIST

Ref. No.		Parts Number	Description
1		131 2 1410 21501	Cover
2		131 2 1801 12900	Leg
3		131 2 1801 13900	Cushion (Cover Inside R, L)

APPEARANCE PARTS LIST

Ref. No.		Parts Number	Description
5		131 0 1016 32702	Panel, Decorative Assy (Silver)
		131 0 1016 32704	Panel, Decorative Assy (Black)
6		131 0 1001 48000	Knob (Function) (Silver)
		131 0 1001 48003	Knob (Function) (Black)
7		131 0 1001 48200	Knob (Tuning) (Silver)
		131 0 1001 48207	Knob (Tuning) (Black)
8		131 0 1001 49000	Knob (Power) (Silver)
		131 0 1001 49003	Knob (Power) (Black)
9		131 0 1001 49100	Knob (Push Switch) (Silver)
		131 0 1001 49103	Knob (Push Switch) (Black)
10		131 2 1110 25500	Plate Decorate
11		131 2 1201 33101	Plate Dial
12		131 2 1503 12800	Decorate Sign Stereo Ind.
13		131 2 4101 21400	Pointer
14		131 2 5205 19000	Cushion (Pointer)
15	*	131 2 5205 15300	Cushion

CHASSIS PARTS LIST

Ref. No.		Parts Number	Description
20		131 0 3002 11300	Drum Assy
21		131 0 3003 20600	Shaft Dial Assy
22		131 0 3008 11901	Support Antenna Assy
23	*	131 2 3301 25200	Chassis
24		131 2 3304 17200	Plate Dial Rear
25	*	131 2 3305 26400	Panel Front
26	*	131 2 3306 27205	Panel Rear
27		131 2 3621 00400	Clamp, 75 ohm Coax
28		131 2 3621 00500	Base, Coax, Clamp
29		131 2 4111 00400	Tension Spring
30		131 2 4112 10201	Dial Cord

CHASSIS PARTS LIST

Ref. No.		Parts Number	Description
31	*	131 2 5205 15300	Cushion
32		131 2 6111 14200	Bushing, Line Cord
33		131 2 6111 14801	Bushing, Antenna Lead

ELECTRICAL PARTS LIST

Ref. No.		Parts Number	Description
34		4 2312 01020	Switch Slide, 110 – 220V Select
35		4 2312 01050	Switch Push Power
36		4 2359 23070	Output Jack
37		4 2349 20950	Fuse 160mA Slow
38		4 2349 21540	Fuse 800mA Slow
39		4 2359 21021	Fuse Holder
40		4 2379 21460	Antenna Terminal
41	*	4 2439 20526	Line Cord
42		4 2512 09420	Power Transformer
43		4 2579 25180	AM Antenna
44		4 2599 20300	Balun
45(M1)		4 5112 00340	Meter, Signal Strength
46(M2)		4 5112 00350	Meter, Center of Channel
47		4 6122 00460	Pilot Lamp Stereo Ind. 6V 30mA
48		4 6122 00620	Pilot Lamp 8V 200mA
49		4 6122 01110	Pilot Lamp 8V 200mA
50	*	131 0 4001 92304	RF IF MPX P.C.B. Assy
51	*	131 0 4001 02810	Function Switch P.C.B. Assy
52	*	131 0 4001 02820	LW/MW Conv. Terminal P.C.B. Assy
53	*	131 0 4001 02301	Power Supply P.C.B. Assy
C01,02		C2EHRM103A	Metallized Paper 0.01 μF 250V ±20%
R01		R2HCPK222A	Solid 2.2k 1/2W ±10%

*—Not a service part.

FM TUNER ALIGNMENT

FM ALIGNMENT – FUNCTION switch to FM AUTO.

Maintain generator output as low as possible for suitable indications.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
Note: The FM IF circuit utilizes a non-turnable ceramic filter which establishes the IF bandpass. To insure symmetrical tuning and selectivity, the IF must be aligned precisely to the center of the filter bandpass, rather than to 10.7 MHz as in conventional LC circuits.				
1. IF ALIGN-MENT	Connect 10.7 MHz Sweep Generator to VC2, and ground lead to chassis. Markers are not required. Set generator output to –12dB (250mV).	Position of non-interference	Scope vertical input to TP6, and connect ground lead to chassis. Set vertical sensitivity to 0.5V/cm.	Adjust L05 (top slug) for maximum gain and best symmetry. See Figure 1 for FM IF ALIGN-MENT.
2. PRELIMI-NARY DE-TECTOR ALIGN-MENT	Generator connections are the same as above. Adjust for S-curve display. Set generator output to –20dB. (100mV)	Position of non-interference	Scope vertical in-put to TP19.	Adjust IFT01 (bottom slug) for maximum gain and best linearity. Adjust IFT01 (top slug) for minimum gain and best linearity. See Figure 2 for FM DETECTOR ALIGNMENT. NOTE: Harmonic Distortion test must be performed as part of detector alignment.
NOTE: Connect 120-ohm composition resistors in series with each lead from the RF generator to match the 50-ohm output to the 300-ohm input impedance. Generator output voltage is reduced to one-half at antenna terminals. Signal voltages specified in this table are generator output levels, *not* antenna voltages.				
3. FRONT END ALIGNMENT		Tuning knob fully counterclockwise		Center dial pointer on "0" (zero) and cement
4. FRONT END ALIGNMENT (90 MHz)	Connect FM RF generator through two 120-ohm resistors to FM ANT screw terminals. Set generator to 90 MHz, modulate with 400 Hz to provide ±75 kHz deviation. Adjust output for approximately 50% on Signal Strength meter.	Center of 90 MHz calibration mark on dial	Front panel Field Strength meter (M1) and Center of Channel meter (M2)	Adjust L04, L03, L02, and L01 for maximum deflection on Field Strength meter and zero delection of M2. Reduce generator output to keep Field Strength meter indication at approximately 50%. NOTE: It is almose unnecessary to adjust L01 - 04 in Front End as perfectly adjusted.
5. FRONT END ALIGNMENT (106 MHz)	Change generator setting to 106 MHz.	Center of 106 MHz calibration mark. on dial	Same as above	Adjust TC3, TC2, and TC1 for maximum deflection on Field Strength meter (M1) and zero deflection of M2. Reduce generator output to keep Field Strength meter indication at approximately 50%. Repeat steps 4 and 5 for optimum alignment.
6. FINAL DETECTOR ALIGN-MENT (MINIMUM THD)	Set generator to TUNER frequency. Modulate with 400 Hz ±75 kHz deviation. Connect generator to FM ANT terminals.	Tune TUNER to Position of non-interference.	Scope vertical input to TUNER OUTPUT jack.	Reduce generator output for noise to be visible on sine wave. Readjust generator frequency to center noise on positive and negative half cycles. See Figure 3 for SYMMETRICAL TUNING. Adjust VR01 (200k) for CENTER 0 (ZERO). NOTE: Do not change generator or TUNER tuning; proceed to Item 7.

FM TUNER ALIGNMENT

– continued –

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
7.	Same as above. Increase generator output to 2mV.	Same as above.	AC Voltmeter and Harmonic Distortion Analyzer to LEFT TUNER OUTPUT jack.	Adjust IFT01 (bottom slug) for center of channel indication on M2. Adjust top slug for minimum THD (0.3% typically).
8. PLL IC F.R.F. (76 kHz)	Same as above.	Same as above	Connect frequency counter to TP13. NOTE: Connect Buffer Amp of a high input impedance (over 500k-ohm) to TP13 and then, to the frequency counter through 220 k-ohm.	Adjust VR05 (5k) in Multiplex circuit to obtain 76 kHz ±200 Hz on counter.
9. PILOT CANCEL ADJUSTMENT	Set generator to TUNER frequency. Modulate with 19 kHz ±7.5 kHz deviation (Pilot Signal). Connect generator to FM ANT terminals.	Tune TUNER to Position of non-interference	Scope vertical input to LEFT TUNER OUTPUT jack.	Adjust VR04 (100k) until deviation of levels (VTVM output) on R and L channels become minimum.
10. FM Stereo SIGNAL SEPARATION CONTROL	Connect FM stereo SG to FM ANT terminals. 19 kHz signal On. Main channel, sub channel signal ON. Apply 1000 Hz signal form L Ch.		Scope and AC-VTVM to RIGHT TUNER OUTPUT jack.	Adjust VR06 (10k) for minimum output.
	Same as above for RIGHT channel.		Scope and AC-VTVM to LEFT TUNER OUTPUT jack.	

AM TUNER ALIGNMENT

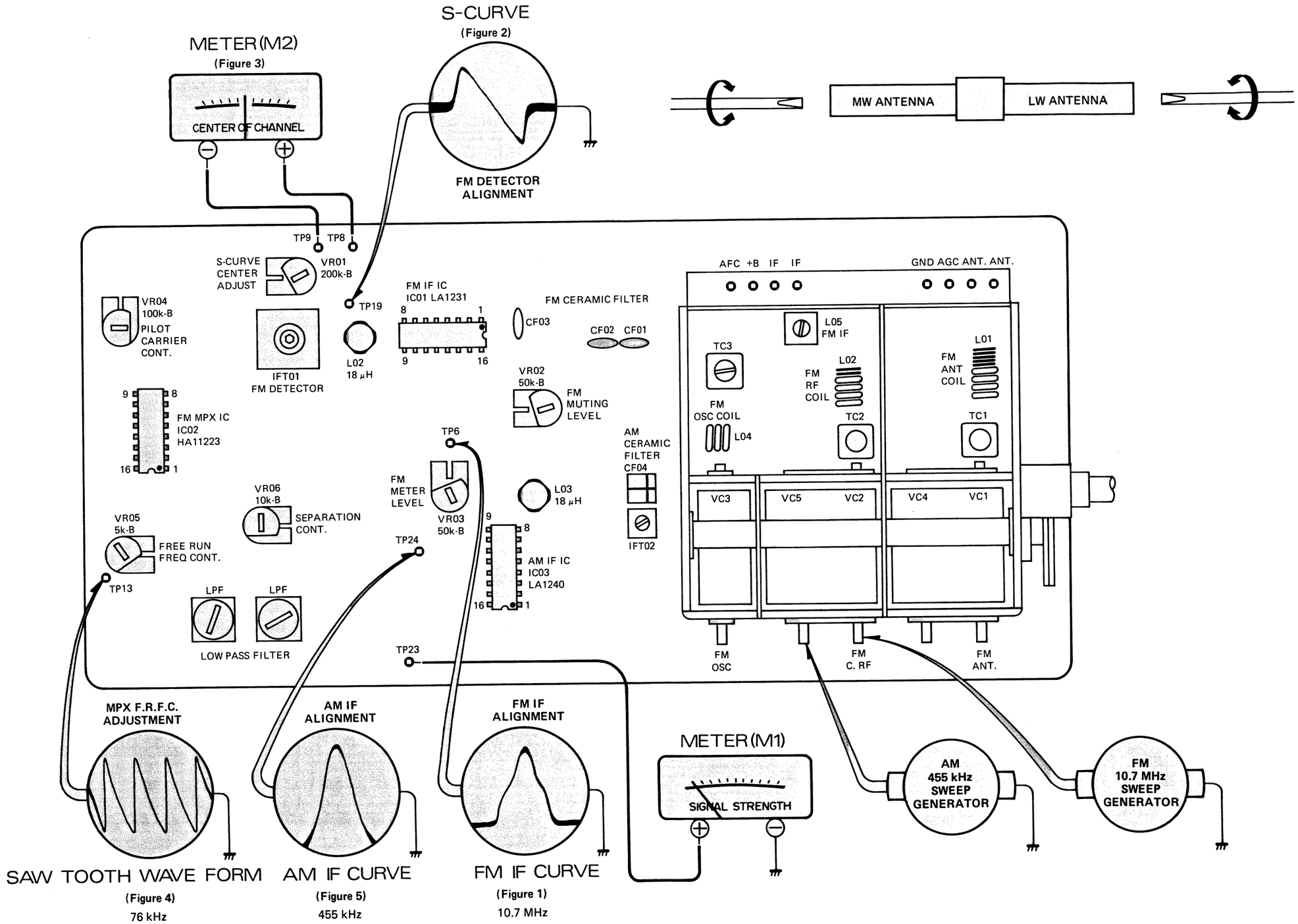
AM ALIGNMENT – FUNCTION switch to MW or LW position.

Maintain generator output as low as possible for suitable indication.

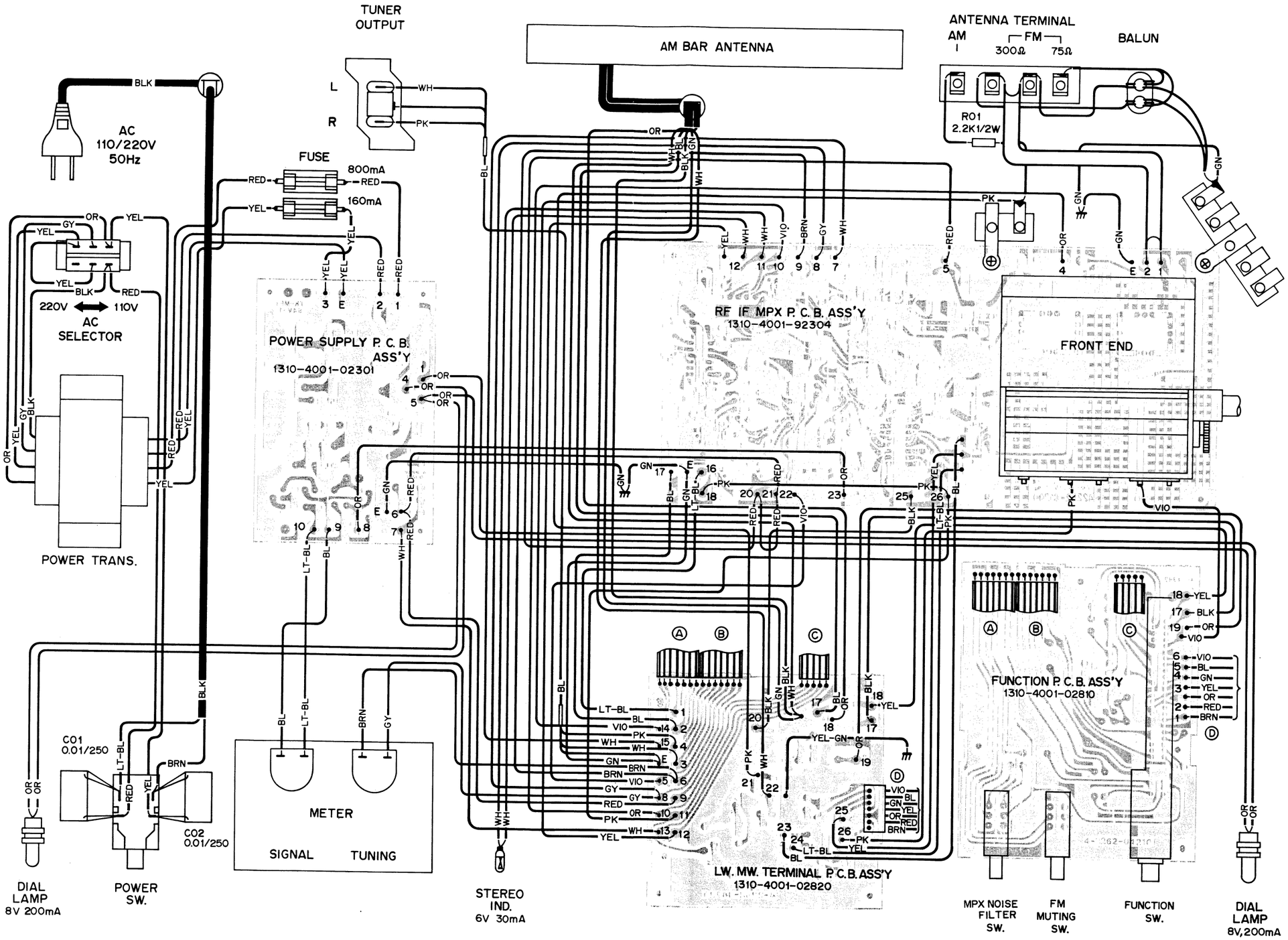
ITEM	GENERATOR	AM DIAL SETTING	INDICATOR	PROCEDURE
1. IF ALIGN-MENT	Connect 455 kHz sweep generator to VC5 and ground lead to chassis. Use 0.1 μF capacitor in series with generator lead.	Position of non-interference near 1400 kHz	Scope vertical input to TP24, and ground lead to chassis. Set vertical sensi-tivity to 0.2 V/cm	Connect jumper to Pin 3 and chassis ground. Adjust IFT02 (top slug) for maximum gain and best symmetry. Keep signal low enough for noise on response as shown in Figure 5. Dis-connect jumper after completion of AM IF Alignment.
2. MW (RF) TRACKING ALIGN-MENT (600 kHz)	AM generator to EXT AM ANT and GND ter-minals. Set to 600 kHz. Modu-late with 400 Hz (30% modulation).	Center of 600 kHz calibration mark on dial	Front panel field Strength meter (M1)	Adjust MW OSC and AM ANT (MW) for maximum Field Strength meter indication. Reduce generator output to keep meter reading below 50%.
3. (1400 kHz)	Set to 1400 kHz.	Center of 1400 kHz calibration mark on dial	Same as above	Adjust TC02 and TC04 for maximum deflection, Keep meter reading below 50%. Repeat steps (2) and (3) until optimum alignment is reached.
4. LW (RF) TRAKING ALIGN-MENT (150 kHz)	Change generator setting to 150 kHz.	Center of 150 kHz calibration mark on dial	Front Panel Field strength meter (M1)	Adjust LW OSC and AM ANT (LW) for maximum Field Strength meter indicatoin. Reduce generator output to keep meter reading below 50%.
5. (350 kHz)	Set to 350 kHz.	Center of 350 kHz calibration mark on dial	Same as above	Adjust TC01 and TC03 for maximum deflection. Keep meter reading below 50%. Repeat steps (4) and (5) until optimum alignment is reached.

AM-FM TUNER BOARD LAYOUT

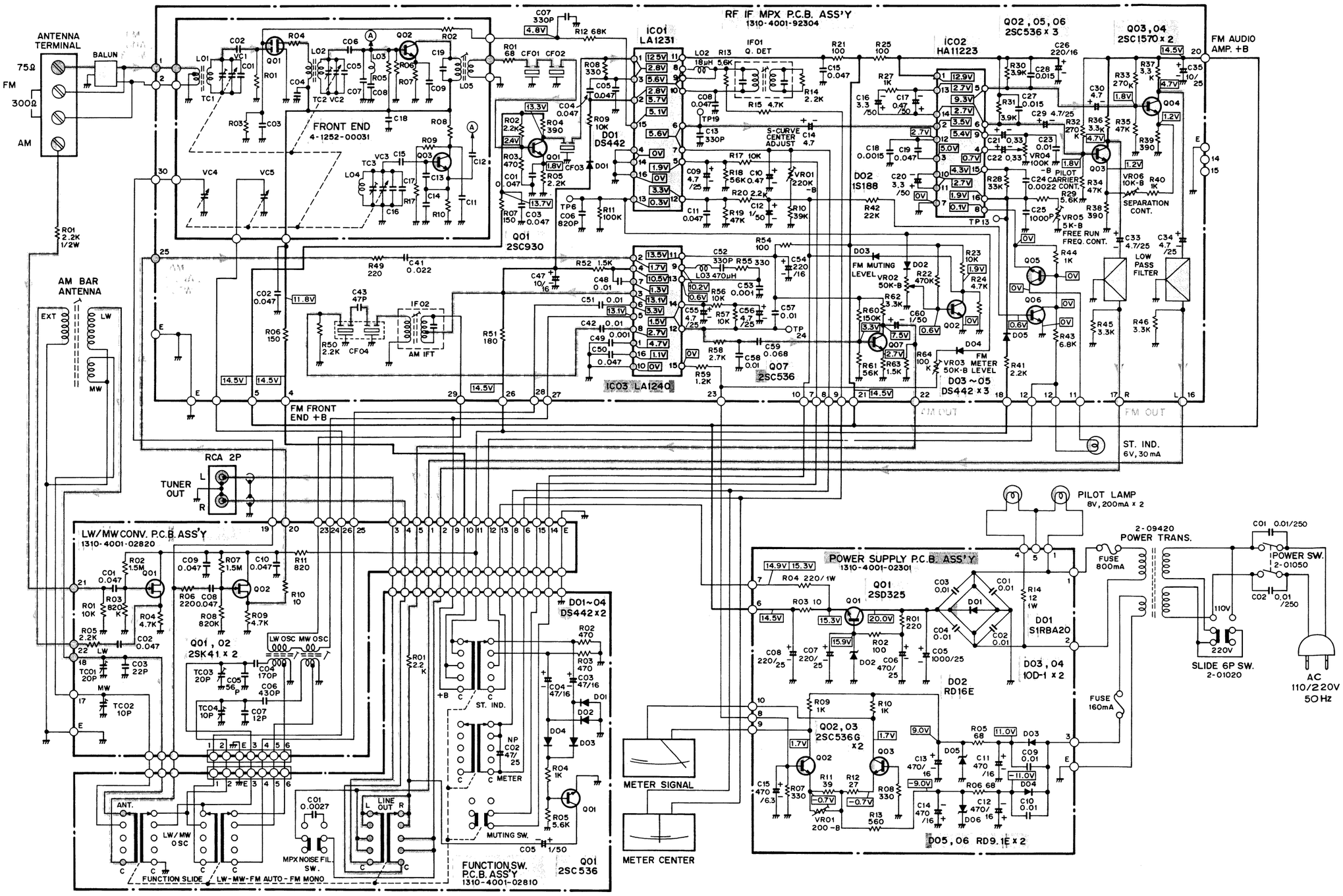
WITH OSCILLOSCOPE TIME BASE SETTINGS
(TOP VIEW)



POINT TO POINT WIRING DIAGRAM



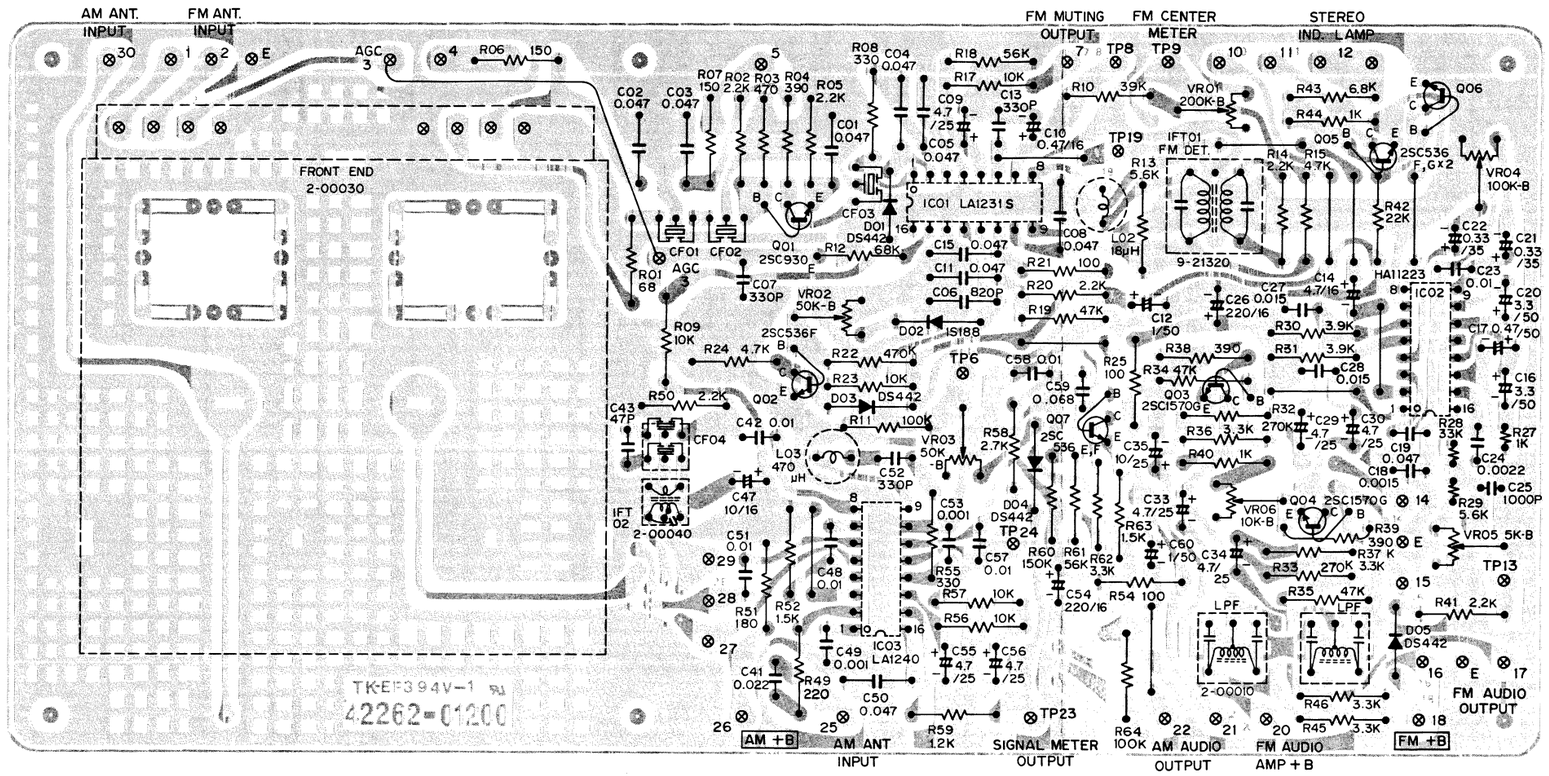
SCHEMATIC DIAGRAM



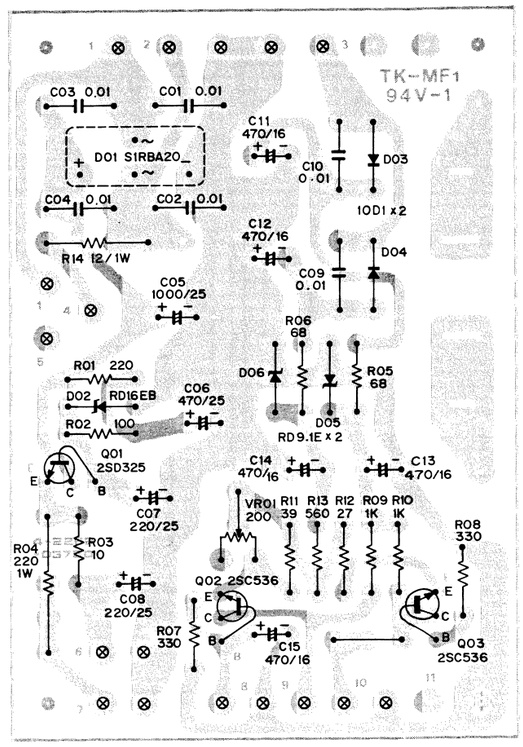
NOTES:

1. All resistors values are indicated in "ohm" (K=10^3, M=10^6).
2. All capacitors values are indicated in "μF" (P=10^{-12}).
3. All volatages indicated on the schematics are measured under the following conditions.
   a. Use a V.T.V.M.
   b. All voltages ±10% with respect chassis ground
   c. No signals at input terminals
   d. AC input at 220 volts 50 Hz
4. This is a fundamental schematics diagram. Some products may be modified without notice.

RF IF MPX P.C.BOARD
(BOTTOM VIEW)



POWER SUPPLY P.C.BOARD
(BOTTOM VIEW)

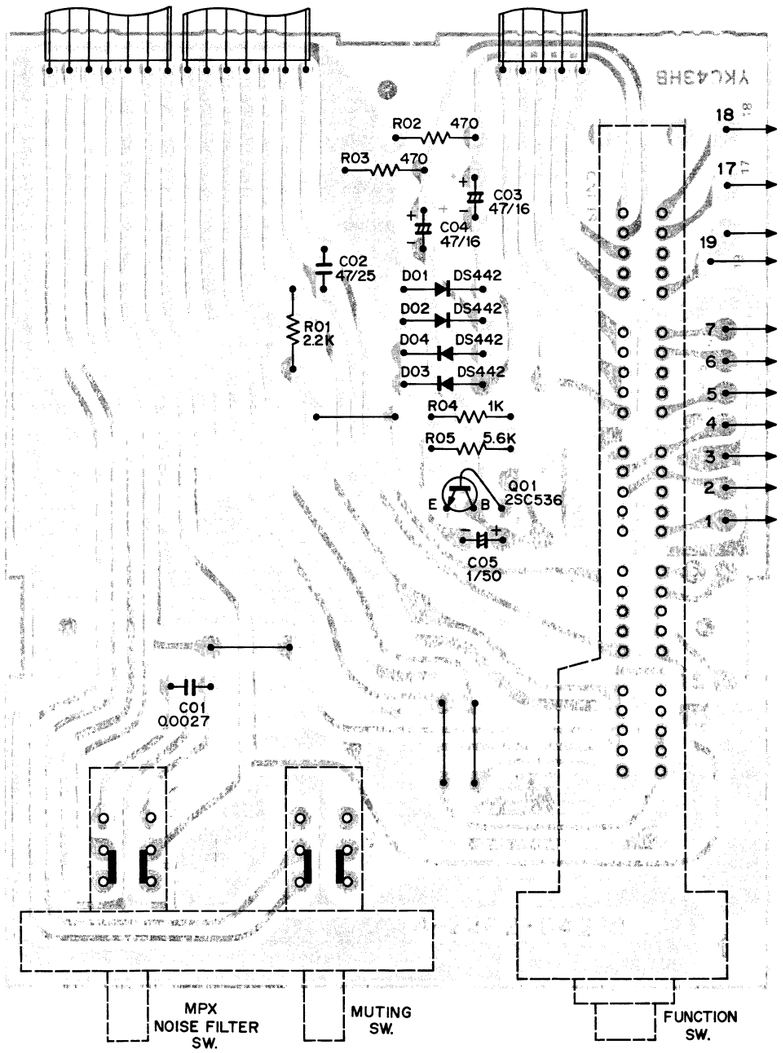


TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01	2SC930	2.4V	13.3V	1.8V
Q02	2SC536	0.6V	1.9V	0V
Q03,04	2SC1570	1.8V	4.7V	1.2V
Q05	2SC536	0V	0V	0V
Q06	2SC536	0.6V	0V	0V
Q07	2SC536	3.3V	7.5V	2.7V

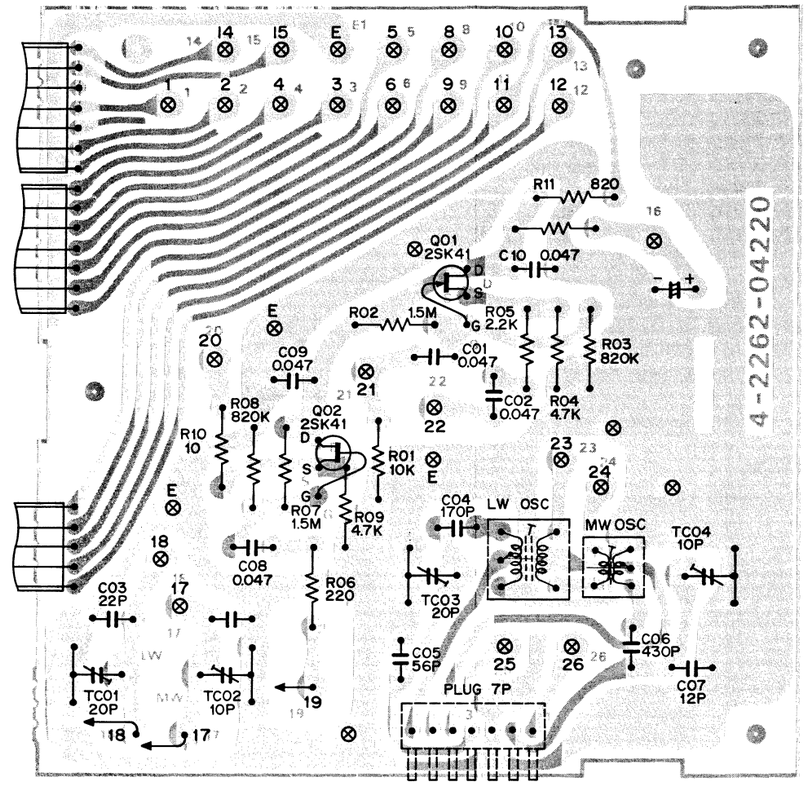
IC PIN NUMBERS VOLTAGES																	
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC01	LA1231	2.8V	2.8V	2.8V	0V	1.9V	5.6V	5.6V	5.6V	5.6V	5.6V	12.5V	3.3V	0.3V	0V	5.1V	0V
IC02	HA11223	12.9V	3.5V	5.0V	0.7V	9.3V	9.3V	0V	0.1V	5.4V	2.7V	2.7V	2.7V	2.7V	2.7V	4.3V	1.9V
IC03	LA1240	4.7V	1.7V	13.1V	10.5V	13.1V	3.3V	1.3V	2.7V	10.2V	0V	13.5V	1.5V	0.6V	1.5V	0V	1.1V

TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01	2SD325	15.9V	20.0V	15.3V
Q02	2SC536	–	1.7V	–0.7V
Q03	2SC536	–	1.7V	–0.7V

FUNCTION SWITCH P.C.BOARD
(BOTTOM VIEW)

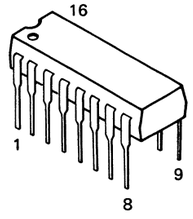


LW/MW CONV. TERMINAL P.C.BOARD
(BOTTOM VIEW)



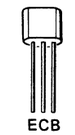
SEMICONDUCTOR LEAD IDENTIFICATION

INTEGRATED CIRCUITS

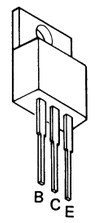


- LA1231
- LA1240
- HA11223

TRANSISTORS

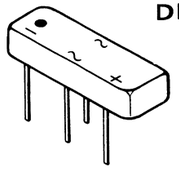


- 2SC536
- 2SC1570

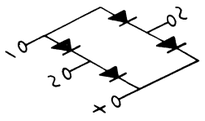


- 2SD325F

DIODES



- S1RBA20



Cathode

Anode

- DS-442
- 10D-1
- 1S-188
- RD-16E
- RD-9.1E

PARTS LIST

RF IF MPX P.C.B. Assy
131 0 4001 92304

Ref. No.	Parts Number	Description
	4 1252 00031	Front-End (Component parts used in Front End are not serviceable and available.)
	4 2359 23120	Socket 16P
	4 2522 00010	Low Pass Filter
IFT1	4 2569 21320	IF Transformer FM
IFT2	4 2562 00040	IF Transformer AM
L02	4 2532 00030	Choke Coil 18 μH
L03	4 2532 00020	Choke Coil 470 μH
VR01	4 2229 24930	VR 200k-B (Center Adj.)
VR02	4 2229 24920	VR 50k-Bx1 (Muting Adj.)
VR03	4 2229 24920	VR 50k-Bx1 (Meter Adj.)
VR04	4 2229 25330	VR 100k-Bx1 (Pilot Cancel)
VR05	4 2229 24040	VR 5k-Bx1 (Free-Run Adj.)
VR06	4 2229 25340	VR 10k-Bx1 (Separation)
CF01,02 03	4 2279 20340	Ceramic Filter (FM IF)
CF04	4 2272 00010	Ceramic Filter (AM IF)
	CAPACITORS	
C01,02 03,04 05	C1HYYZ473APA	Ceramic 0.047 μF 50V +80,–20%
C06	C1HYYK821RPA	Ceramic 820 pF 50V ±10%
C07	C1HCYK331APA	Ceramic 330 pF 50V ±10%
C08	C1HYYZ473APA	Ceramic 0.047 μF 50V +80,–20%
C09	C1ERY-475APA	Electrolytic 4.7 μF 25V
C10	C1CUBX474A	Sint. Alu. 0.47 μF 16V +40,–20%
C11	C1HYYZ473APA	Ceramic 0.047 μF 50V +80,–20%
C12	C1HRY-105APA	Electrolytic 1 μF 50V
C13	C1HCSK331SL	Ceramic 330 pF 50V ±10%
C14	C1CUEX475A	Sint. Alu. 4.7 μF 16V +40,–20%
C15	C1HYYZ473APA	Ceramic 0.047 μF 50V +80,–20%
C16	C1HRY-335LPA	Electrolytic 3.3 μF 50V
C17	C1HRE-474AL	Electrolytic 0.47 μF 50V
C18	C1HFYK152APA	Mylar 0.0015 μF 50V ±10%
C19	C1HFYK473APA	Mylar 0.047 μF 50V ±10%
C20	C1HRY-335LPA	Electrolytic 3.3 μF 50V
C21,22	C1VTRK334A	Tantalum 0.33 μF 35V ±10%
C23	C1HFYK103APA	Mylar 0.01 μF 50V ±10%
C24	C1HFYK222APA	Mylar 0.0022 μF 50V ±10%
C25	C1HSEK102A	Styrol 1000 pF 50V ±10%
C26	C1CRE-227A	Electrolytic 220 μF 16V
C27	C1HFYK153APA	Mylar 0.015 μF 50V ±10%
C28	C1HFAK153A	Mylar 0.015 μF 50V ±10%
C29,30 33,34	C1ERY-475LPA	Electrolytic 4.7 μF 25V
C35	C1ERE-106A	Electrolytic 10 μF 25V
C41	C1HFYK223APA	Mylar 0.022 μF 50V ±10%
C42	C1HFYK103APA	Mylar 0.01 μF 50V ±10%
C43	C1HCYK470APA	Ceramic 47 pF 50V ±10%
C47	C1CRY-106APA	Electrolytic 10 μF 16V
C48	C1HFYK103APA	Mylar 0.01 μF 50V ±10%
C49	C1HYYZ102APA	Ceramic 0.001 μF 50V +80,–20%
C50	C1HYYZ473APA	Ceramic 0.047 μF 50V ±10%
C51	C1HFYK103APA	Mylar 0.01 μF 50V ±10%
C52	C1HCYK331APA	Ceramic 330 pF 50V ±10%
C53	C1HYYZ102APA	Ceramic 0.001 μF 50V +80,–20%
C54	C1CRE-227A	Electrolytic 220 μF 16V
C55,56	C1ERY-475APA	Electrolytic 4.7 μF 25V
C57,58	C1HFYK103APA	Mylar 0.01 μF 50V ±10%
C59	C1HFYK683APA	Mylar 0.068 μF 50V ±10%
C60	C1HRE-105A	Electrolytic 1 μF 50V
	SEMICONDUCTORS	
D01	205 5 9040 44210	Diode, DS-442
D02	202 5 9110 18820	Diode, 1S188FM1
D03,04 05	205 5 9040 44210	Diode, DS-442
IC01	206 5 0161 23110	IC, LA1231
IC02	IKK-HA11223	IC, HA11223
IC03	206 5 0171 24010	IC, LA1240
Q01	203 5 5500 93050	TR 2SC930 E
Q02	203 5 5000 53660	TR 2SC536 F,G
Q03,04	203 5 5251 57070	TR 2SC1570 G
Q05,06	203 5 5000 53660	TR 2SC536 F,G
Q07	203 5 5000 53650	TR 2SC536 E,F
	RESISTORS	
R01	R2EDZJ680APA	Carbon 68 1/4W ±5%
R02	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R03	R2EDZJ471APA	Carbon 470 1/4W ±5%
R04	R2EDZJ391APA	Carbon 390 1/4W ±5%
R05	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R06,07	R2EDZJ151APA	Carbon 150 1/4W ±5%
R08	R2EDZJ331APA	Carbon 330 1/4W ±5%
R09	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R10	R2EDZJ393APA	Carbon 39k 1/4W ±5%
R11	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R12	R2EDZJ683APA	Carbon 68k 1/4W ±5%
R13	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%
R14	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R15	R2EDZJ472APA	Carbon 4.7k 1/4W ±5%
R17	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R18	R2EDZJ563APA	Carbon 56k 1/4W ±5%
R19	R2EDZJ473APA	Carbon 47k 1/4W ±5%
R20	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R21	R2EDZJ101APA	Carbon 100 1/4W ±5%
R22	R2EDZJ474APA	Carbon 470k 1/4W ±5%
R23	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R24	R2EDZJ472APA	Carbon 4.7k 1/4W ±5%
R25	R2EDZJ101APA	Carbon 100 1/4W ±5%
R27	R2EDUJ102A	Carbon 1k 1/4W ±5%
R28	R2EDUJ333A	Carbon 33k 1/4W ±5%
R29	R2EDUJ562A	Carbon 5.6k 1/4W ±5%
R30,31	R2EDZJ392APA	Carbon 3.9k 1/4W ±5%
R32,33	R2EDZJ274APA	Carbon 270k 1/4W ±5%
R34,35	R2EDZJ473APA	Carbon 47k 1/4W ±5%
R36,37	R2EDZJ332APA	Carbon 3.3k 1/4W ±5%
R38,39	R2EDZJ391APA	Carbon 390 1/4W ±5%
R40	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R41	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R42	R2EDZJ223APA	Carbon 22k 1/4W ±5%
R43	R2EDZJ682APA	Carbon 6.8k 1/4W ±5%

PARTS LIST (Continued)

Ref. No.	Parts Number	Description
	RESISTORS	
R44	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R45,46	R2EDZJ332APA	Carbon 3.3k 1/4W ±5%
R49	R2EDZJ221APA	Carbon 220 1/4W ±5%
R50	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R51	R2EDZJ181APA	Carbon 180 1/4W ±5%
R52	R2EDZJ152APA	Carbon 1.5k 1/4W ±5%
R54	R2EDZJ101APA	Carbon 100 1/4W ±5%
R55	R2EDZJ331APA	Carbon 330 1/4W ±5%
R56,57	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R58	R2EDZJ272APA	Carbon 2.7k 1/4W ±5%
R59	R2EDZJ122APA	Carbon 1.2k 1/4W ±5%
R60	R2EDZJ154APA	Carbon 150k 1/4W ±5%
R61	R2EDZJ563APA	Carbon 56k 1/4W ±5%
R62	R2EDZJ332APA	Carbon 3.3k 1/4W ±5%
R63	R2EDZJ152APA	Carbon 1.5k 1/4W ±5%
R64	R2EDZJ104APA	Carbon 100k 1/4W ±5%

POWER SUPPLY P.C.B. Assy
131 0 4001 02301

Ref. No.	Parts Number	Description
VR01	4 2229 25000	VR 200-B
	CAPACITORS	
C01,02 03,04	C2HYSP103A	Ceramic 0.01 μF 500V +100,–0%
C05	C1ERE-108A	Electrolytic 1000 μF 25V
C06	C1ERE-477A	Electrolytic 470 μF 25V
C07,08	C1ERE-227A	Electrolytic 220 μF 25V
C09,10	C2HYSP103A	Ceramic 0.01 μF 500V +100,–0%
C11,12 13,14	C1CRE-477A	Electrolytic 470 μF 16V
C15	C0JRE-477A	Electrolytic 470 μF 6.3V
	SEMICONDUCTORS	
D01	DDD-S1RBA20	Diode, S1RBA20
D02	DNN-RD-16E	Zener Diode, RD-16E
D03,04	DCC-10D1	Diode, 10D-1
D05,06	DNN-RD9.1E	Diode, RD9.1E
Q01	203 5 8620 32560	TR 2SD325 F
Q02,03	203 5 5000 53670	TR 2SC536 G
	RESISTORS	
R01	R2EDPJ221A	Carbon 220 1/4W ±5%
R02	R2EDPJ101A	Carbon 100 1/4W ±5%
R03	R2EDPJ100A	Carbon 10 1/4W ±5%
R04	R3AXBJ221A	Oxide Metal Film 220 1W ±5%
R05,06	R2EDPJ680A	Carbon 68 1/4W ±5%
R07,08	R2EDZJ331APA	Carbon 330 1/4W ±5%
R09,10	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R11	R2EDZJ390APA	Carbon 39 1/4W ±5%
R12	R2EDZJ270APA	Carbon 27 1/4W ±5%
R13	R2EDZJ561APA	Carbon 560 1/4W ±5%
R14	R3AXBJ120A	Oxide Metal Film 12 1W ±5%

FUNCTION SWITCH P.C.B. Assy
131 0 4001 02810

Ref. No.	Parts Number	Description
	4 2312 02030	Switch Push 2key
	4 2312 03400	Slide Rotary Switch
	131 0 4006 21900	Cord Assy (7P)
	CAPACITORS	
C01	C1HFYK272APA	Mylar 0.0027 μF 50V ±10%
C02	C1EAEN476A	Electrolytic 47 μF 25V ±30%
C03,04	C1CRY-476APA	Electrolytic 47 μF 16V
C05	C1HRY-105APA	Electrolytic 1 μF 50V
	SEMICONDUCTORS	
D01,02 03,04	205 5 9040 44210	Diode, DS-442
Q01	203 5 5000 53670	TR 2SC536 G
	RESISTORS	
R01	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R02,03	R2EDZJ471APA	Carbon 470 1/4W ±5%
R04	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R05	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%

LW/MW CONV. TERMINAL P.C.B. Assy
131 0 4001 02820

Ref. No.	Parts Number	Description
	4 2369 22750	Plug 7P
	4 2582 00050	OSC Coil (MW)
	4 2582 00110	OSC Coil (LW)
TC01	4 2249 20440	Trimmer Capacitor (LW)
TC02	4 2249 20310	Variable Capacitor (MW)
TC03	4 2249 20440	Trimmer Capacitor (LW)
TC04	4 2249 20310	Variable Capacitor (MW)
	CAPACITORS	
C01,02	C1HYYZ473APA	Ceramic 0.047 μF 50V +80,–20%
C03	C1HCYK220APA	Ceramic 22 pF 50V ±10%
C04	C1HSEJ171A	Styrol 170 pF 50V ±5%
C05	C1HCSK560SL	Ceramic 56 pF 50V ±10%
C06	C1HSEJ431A	Styrol 430 pF 50V ±5%
C07	C1HCSJ120SL	Ceramic 12 pF 50V ±5%
C08,09 10	C1HYYZ473APA	Ceramic 0.047 μF 50V +80,–20%
	SEMICONDUCTORS	
Q01 02	203 5 6510 04160	TR 2SK41 F
	RESISTORS	
R01	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R02	R2EDZJ155APA	Carbon 1.5M 1/4W ±5%
R03	R2EDZJ824APA	Carbon 820k 1/4W ±5%
R04	R2EDZJ472APA	Carbon 4.7k 1/4W ±5%
R05	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R06	R2EDZJ221APA	Carbon 220 1/4W ±5%
R07	R2EDZJ155APA	Carbon 1.5M 1/4W ±5%
R08	R2EDZJ824APA	Carbon 820k 1/4W ±5%
R09	R2EDZJ472APA	Carbon 4.7k 1/4W ±5%
R10	R2EDZJ100APA	Carbon 10 1/4W ±5%
R11	R2EDZJ821APA	Carbon 820 1/4W ±5%

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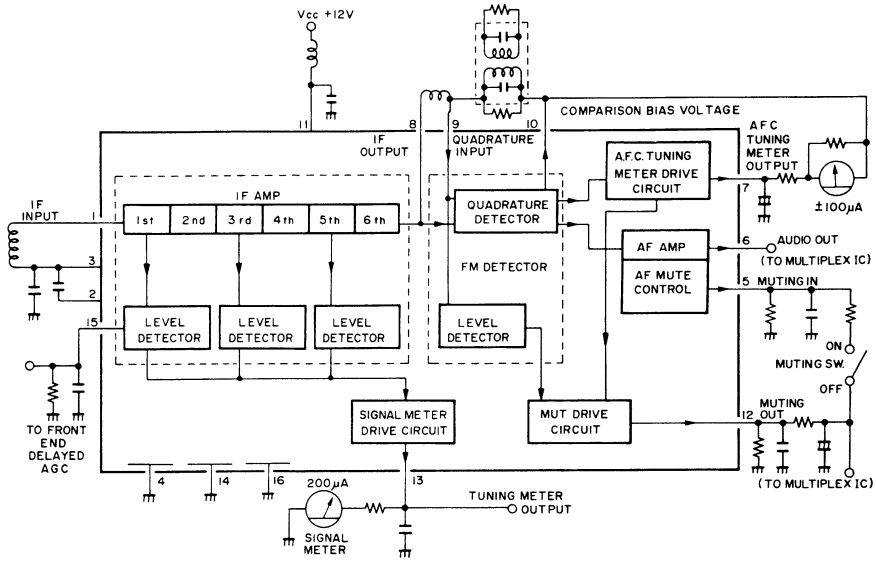

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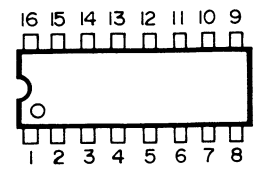

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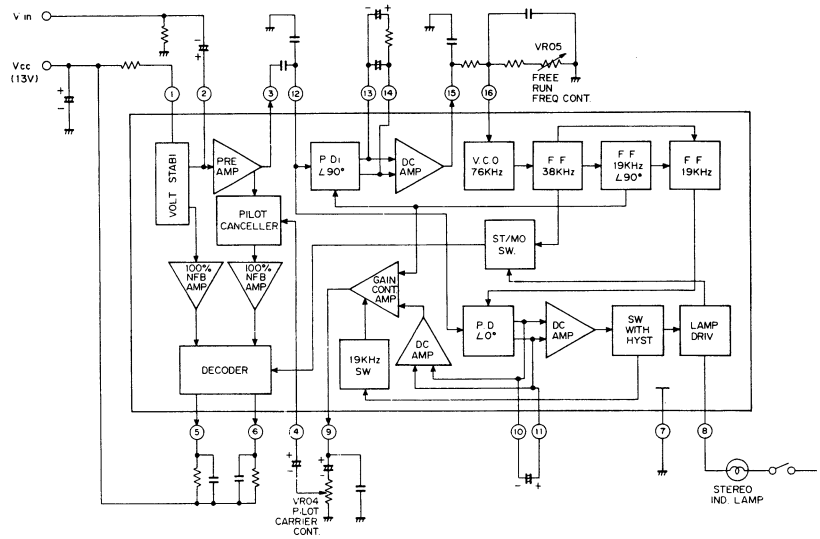

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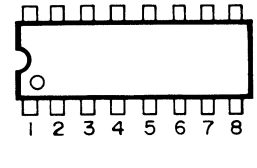

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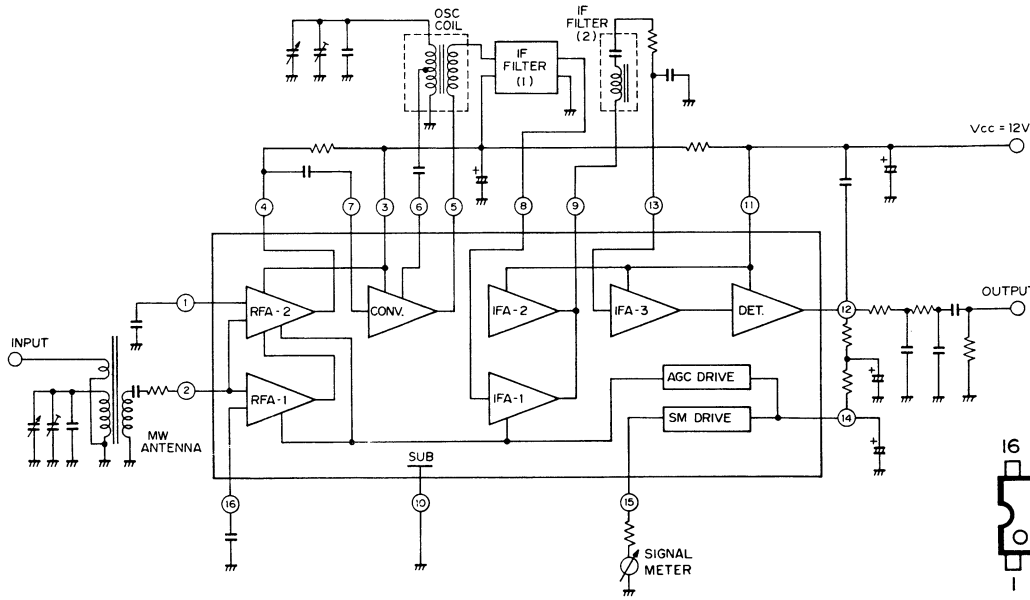

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